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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference KC,016-PCT	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/03070	International filing date (day/month/year) 15.07.2003	Priority date (day/month/year) 15.07.2002	
International Patent Classification (IPC) or both national classification and IPC H04Q7/36			
Applicant KING'S COLLEGE LONDON et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of eleven sheets.

3. This report contains indications relating to the following items:

- I Basis of the opinion
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 22.12.2003	Date of completion of this report 12.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Aguilar Cabarrus, E Telephone No. +49 89 2399-7524



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I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-23 as originally filed

Claims, Numbers

1-48 as originally filed

Drawings, Sheets

18-99 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

_____, _____ were available or furnished to this Authority in the following language: _____, which is:

the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

the language of publication of the international application (under Rule 48.3(b)).

the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4 The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

restricted the claims.
 paid additional fees.
 paid additional fees under protest.
 neither restricted nor paid additional fees.

2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

complied with.
 not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

all parts.
 the parts relating to claims Nos. 1-46 .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-46
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-46
Industrial applicability (IA)	Yes: Claims	1-46
	No: Claims	

2. Citations and explanations

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see separate sheet

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Reference is made to the following documents:

D1: US 5 920 819

D2: US 5 437 054

The document **D2** was not cited in the international search report. A copy of the document is appended hereto.

Re Item IV

Lack of unity of invention

The present claims relate to inventions which are not so linked as to form a single general inventive concept, Rule 13.1 PCT. The inventions are as follows:

Invention I: **Claims 1-46**

Invention II: **Claims 47-48**

Invention I is directed to a **method of operating a cellular communication system in a hierarchical cell structure**, in which an electronic indication representative of the quality of service of the communication devices served by the macro cell base stations is received, processed and compared with a predetermined threshold for said quality of service, and in response to that, the signals emitted by the micro cell station are electronically controlled.

Invention II is directed to a **method of operating a cellular communication system in a hierarchical cell structure**, in which transmission data are prioritised to a first group of cellular communication devices served by the micro cell base station that require real-time data above a second group of devices that require non real-time data.

The only technical feature **common** to both, **Inventions I and II**, is that the method is performed in a cellular communication system presenting a hierarchical cell structure. However, this feature is known from the prior art (see **D1**, abstract and figure 1). As a consequence, the inventions result in not being linked as to form a single general inventive concept.

Therefore, Inventions I and II do not meet the requirements of Rule 13.1 PCT.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of **claim 1** does not involve an inventive step in the sense of Article 33(3) PCT. This will be discussed in the following:

Document **D1** (see in particular the abstract; fig. 1, 3; column 1, lines 4-26; column 3, lines 33-36; column 7, line 33 - column 8, line 67) cited in the search report (applying the terminology of present **claim 1** and references of or to **D1**) discloses a method of operating a CDMA cellular communications system comprising at least one macro cell having a macro cell base station and at least one micro cell having a micro cell base station, at least part of the micro cell being located within an area served by the macro cell base station (see abstract and figure 1), whereby data may be transmitted and received in the micro and macro cells on the same CDMA frequency bands (column 1, lines 4-11; column 3, lines 33-36), the method comprising the steps of:

- (1) receiving an electronic indication representative of the quality of service at one or more cellular communications devices served by the macro cell base station (column 7, lines 38-42; column 8, lines 4-19);
- (2) electronically processing the or each electronic indication to obtain a comparison with a predetermined threshold for said quality of service (column 7, lines 42-46; column 8, lines 20-37); and
- (3) electronically controlling signals emitted from the micro cell base station in response to said comparison (column 7, lines 45-59; column 8, lines 37-67).

The method of **claim 1** differs from that of document **D1** solely in that the quality of service is maintained by limiting the power of the controlled signals. The technical effect achieved by doing so is the limitation of interference. Limitation of interference is a basic burden to solve in cellular based mobile networks and has been widely studied. In Document **D2**, which belongs to the same technical field as document **D1**, there is need as well of limiting the interference caused by a channel which has been borrowed from an adjacent cell. In document **D2**, in order to limit the interference caused by this channel (see column 9, lines 59-63), the

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power of the transmitted signals is limited (column 9, lines 41-49).

To the skilled person, therefore, starting from the arrangements defined by document D1, in which a channel for a micro cell is selected from the same frequency band as the channels used in the macro cell and for a certain quality of service, and faced with the technical problem of how to maintain this quality of service, it would be obvious to apply the same approach disclosed in D2 to the method of D1, ie. to limit the power of the transmitted signals. In doing so, the skilled person would arrive at the method which corresponds entirely to the subject-matter of present **claim 1**.

Thus, **claim 1** does not meet the requirements of Article 33(3) PCT for lack of inventive step of its subject matter.

2. **Independent claims 21 and 41-46** are mere reformulations of claim 1 in order to define the computer operable control means, the base station controller, the computer readable medium, the computer program and the communications system needed to perform the method described in claim 1. Therefore, the same arguments with regard to inventive step apply.

Thus, **claims 21, 41-43 and 46** do also not meet the requirements of Articles 33(2) and (3) PCT.

3. Furthermore, **dependent claims 2-19 and 22-40** do not appear to contain any additional features which, in combination with the features of any claim to which they refer, involve an inventive step for the reason that the subject-matter of said claims is either in principle directly derivable from the disclosure of document D1 (see for **claims 2,3, 22 and 23** column 1, lines 57-63; for **claims 4 and 24** column 7, line 46-59; for **claims 5 and 25** column 2, lines 22-38) or represents simple design details which are generally known to the person skilled in the field of mobile communication systems.

As a consequence, **claims 2-19 and 22-40** do not meet the requirements of Article 33(3) PCT for lack of inventive step of their subject-matter.

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Remarks:

1. The expression "substantially" of **claim 1** is vague and renders unclear the matter for which protection is sought (Article 6 PCT).
3. The **independent claims** are not in the **two-part form** in accordance with Rule 6.3(b) PCT.
4. The features of the claims should be provided with **reference signs** placed in parentheses (Rule 6.2(b) PCT).
5. According to the requirements of Rule 5.1(a)(ii) PCT, documents **D1** and the **relevant background art** disclosed therein should be mentioned in the opening part of the description.